

ABSTRACT

System comprised of a medical device and method for analyzing physiological and health data and representing the most significant parameters at different levels of detail which are understandable to a lay person and a medical professional. Low, intermediate and high-resolution scales can exchange information between each other for improving the analyses; the scales can be defined according to the corresponding software and hardware resources. A low-resolution Scale I represents a small number of primary elements such as intervals between the heart beats, duration of electrocardiographic PQ, QRS, and QT-intervals, amplitudes of P-, Q-, R-, S-, and T-waves. This real-time analysis is implemented in a portable device that requires minimum computational resources. The set of primary elements and their search criteria can be adjusted using intermediate or high-resolution levels. At the intermediate-resolution Scale II, serial changes in each of the said elements can be determined using a mathematical decomposition into series of basis functions and their coefficients. This scale can be implemented using a specialized processor or a computer organizer. At the high-resolution Scale III, combined serial changes in all primary elements can be determined to provide complete information about the dynamics of the signal. This scale can be implemented using a powerful processor, a network of computers or the Internet. The system can be used for personal or group self-evaluation, emergency or routine physiological monitoring and analysis, or continuous event, stress test or bedside physiological monitoring.